ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

Contract to supply 55,000 quartz fiber radiation dosimeters to the U. S. Army Signal Corps has been awarded Landsverk Electrometer Co., Glendale, Calif. For Landsverk, manufacturer of radiation detection instruments, and specializing in quartz fiber designs, this marks the largest single unit order that the firm has booked to date. The fact that this particular dosimeter can be stored and used under adverse conditions, can be read instantly without auxiliary equipment, and is accurate, led to the Signal Corps contract. The contract had been preceded by tests and product analysis at the Signal Corps laboratories, Monmouth, N.J. (Other PRODUCT, PROCESS news, p. 4 this LETTER.)

Early registration of $1.5 million in convertible debentures is planned by Tracerlab, Inc., Boston nuclear products manufacturer. The company will use the proceeds to retire the bank debt of its subsidiary, Keleket X-ray Corp., and for general corporate purposes. Wholesale underwriter will be Lee, Higginson Corp. Tracerlab had acquired Keleket (formerly Kelley-Koett), Covington, Ky., pioneer manufacturer of X-ray equipment, when Keleket's large loss-carry-forward was advantageous tax-wise to Tracerlab. (Other FINANCIAL news, p. 3 this LETTER.)

Operation of three USAEC facilities at Oak Ridge, and one at Paducah, Ky., will continue to be handled by Union Carbide and Carbon Corp., with the recent renewal until June 30, 1960, of UC & C's cost-plus fixed-fee contract, which had been due to expire June 30, 1957. Through its subsidiary Union Carbide Nuclear Co., UC & C is prime contractor at Oak Ridge under this particular contract for the Oak Ridge National Laboratory, and for gaseous-diffusion-process uranium-235 producer plants there. UC & C, under this contract, is also prime operator at Paducah, Ky., of the uranium-235 production operations there. (Other CONTRACT news, p. 5 this LETTER.)

A Council on the Use of Nuclear Materials has now been established in New York State with the purpose of promoting the use of atomic energy in that State by advising industry on the use of new technologies involving nuclear products and processes. As set up by Gov. Harriman, the Council will initially consist of I. Lubin, Industrial Commissioner (of the State); H. E. Hilleboe, Commissioner of the Department of Health; and E. T. Dickinson, Commissioner of Commerce. (Other BUSINESS news, p. 2 this LETTER.)

The symposium on Atomic Energy and Agriculture, being held Dec. 27-29, 1955, at Atlanta, Ga., will have four sessions covering a wide variety of subjects. Sponsorship will be jointly by the Oak Ridge Institute of Nuclear Studies and the American Association for the Advancement of Science. Sessions will cover: (1) Soil plant relations (isotopes in soil research, etc.); (2) Crop improvement and plant metabolism (nutrient uptake measurements, radiation in plant breeding, etc.); (3) Animal metabolism (lactation and hormones, isotopes to study amino acid synthesis, etc.); (4) Food sterilization (use of radiation, effects of radiation on food, etc.)

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ATOMIC ENERGY BUSINESS REPORTS...

LIQUID METAL FUEL REACTOR MAY BECOME ECONOMICALLY ATTRACTIVE, SEMINAR TOLD:- A nuclear reactor using as fuel a liquid metal alloy of bismuth and uranium which "gives primise of being economically attractive" was discussed at a two day seminar last week at the USAEC's Brookhaven National Laboratory, N. Y. This liquid metal fuel reactor (LMFR), has been the subject of research and development at Brookhaven for several years. Its potentialities were evaluated earlier this year by a study group of 50 scientists and engineers representing 14 industrial and 3 other organizations. Babcock & Wilcox, who supervised this study, said a 226,000-kw. LMFR could be built and operated at a cost of 7.1 mils/kwh. Using four reactors of that size at the same location, with a total capacity of 905,000-kw., the cost would be 6.5 mils. (This compares with the projected electricity cost of 9 mils/kwh. for the nuclear power plant Consolidated Edison Co. of N.Y. is building at Indian Point, N.Y., and the 7.5 mils/kwh. cost of electricity it now generates using steam at its highly efficient coal fired Astoria, N.Y., power station.) A further advantage of this LMFR is that chemical processing of the spent uranium-bismuth fuel is relatively inexpensive, and the means to accomplish it may be incorporated as part of the reactor design. Steam produced by the LMFR, Babcock & Wilcox found, would be of temperature and pressure high enough for turbines of the most modern design. Research at Brookhaven also developed a method of removing fission products by fused salt extraction, using a mixture of potassium and lithium chlorides. Still to be determined, however, is the nuclear stability of the LMFR reactor, and proper materials for its construction.

BELGIAN GROUP CONTRACTS TO BUY NUCLEAR POWER PLANT IN U.S.:- A syndicate of 20 Belgian companies will build a 11,500-kw. nuclear power plant in Brussels, and has contracted to buy the plant from Westinghouse Electric International Co.; preliminary work is now underway. Total cost is estimated at between $5 million and $5.5 million. This is the second such plant sold abroad by a U.S. company; first was to Fiat Co., Milan, Italy, also by Westinghouse. (The Fiat delivery awaits signing of a bi-lateral agreement between U.S. and Italy; such an agreement between U.S. and Belgium was signed last June.) The Belgian purchasing organization is the Syndicat d'Etude de l'Energie Nucleaire (Brussels) of which H. Robiliart is chairman, with J. van der Spek, manager. Members of the syndicate include leading Belgian manufacturing, steel, chemical, and utility firms. The plant will use a pressurized water reactor, and will be a modified version of the nuclear propulsion unit in the U.S. Navy's first nuclear submarine Nautilus, which Westinghouse built. It will consist of a primary and secondary system. The primary system, comprising the reactor, steam generators, pumps, and high pressure auxiliary equipment will be enclosed in a large vapor container, for safety. The secondary system will use the heat of the reactor and will be conventional steam turbine electric equipment lolocated outside the vapor container. Westinghouse will manufacture all equipment for the primary system; other apparatus and equipment will be produced by Westinghouse and Belgian manufacturers. Gibbs & Hill, Inc., N.Y., have been retained by Westinghouse for overall plant engineering work. Financing of the undertaking will be provided by the Syndicat Nucleaire and also by Syndicat d'Etudes des Centrales Atomiques, an organization of electrical utilities.

FIRM IN NUCLEAR WORK PURCHASES ENGINEERING COMPANY:- Vitro Corp. of America, N.Y., has contracted to buy Refinery Engineering Co., of Tulsa, Okla., in a transaction that was largely cash with a substantial interest in Vitro common stock in addition. Refinery Engineering, together with its Toronto, Canada, subsidiary will operate as wholly-owned units of Vitro. Refinery Engineering's annual construction contracts have been averaging (gross) $20,000,000 annually. Vitro's gross revenues in 1954 were $29,700,000. Refinery Engineering has been doing engineering and construction of oil refineries. Vitro, an early consolidation of various organizations in nuclear work, is now a diversified firm doing mining, milling, processing and refining of uranium; design and engineering of nuclear process plants; and with research activities, rare metals refining, and other operations.

EUROPEAN NUCLEAR INDUSTRY PLANNED:- A plant for isotopic separation of uranium-235 for enrichment of nuclear fuel has been advocated at a recent committee meeting in Brussels, Belgium, of representatives of Belgium, Germany, France, Italy, Holland, and Luxembourg. Plans are to create a European nuclear industry under an agency known as Euratom.

ATOMIC ENERGY FINANCIAL REPORTS...

SALES GAINS MADE BY FIRMS IN ATOMIC FIELD:- Sales and profits of Nuclear Instrument & Chemical Corp., Chicago, for the fiscal year ended last August 31st, were the highest in the firm's history. Nuclear, manufacturer of radiation measuring instruments, had net earnings for the year, after taxes, of $108,820.45, equivalent to 43¢ a share, as against $19,772.97 or 8¢ a share for the preceding year..... Net sales of General Dynamics Corp. for the first nine months of 1955 were $506,133,306.00, against $477,829,633.00 for the corresponding period in 1954. Net profit in the 1955 period was slightly lower, however, being equal to $2.74 a share against $2.78 a share in the 1954 period..... Sales of industrial and consumer goods by General Electric Co. are substantially ahead of 1954, for the first nine months of this year, according to Ralph J. Cordiner, president. The current quarterly dividend increase to 50¢ from 40¢ paid previously is based on G-E's present level of sales and profits, large backlog of orders, and the favorable economic outlook for 1956 and 1957, Mr. Cordiner stated.

FIRM IS ACQUIRED:- Radioactive Products, Inc. Detroit, radiation consulting firm, is now being acquired by Nuclear Corp. of America. Under an agreement approved last week by Radioactive Products shareholders, Nuclear Corp. will take over the firm for 146,000 shares of Nuclear class A stock. Nuclear Corp., created by merger of Reo Holding and Nuclear Consultants, Inc., is controlled by TelAutograph Corp.

ARRANGEMENTS MADE FOR FINANCING CANADIAN URANIUM PRODUCER:- Bicroft Uranium Mines, Canadian uranium mine in the Bancroft area, is financing its operation with a $5 million debenture issue, and a $3.5 million bank loan. Bicroft, which holds an agreement from the Canadian government purchasing agency (Eldorado) under which Eldorado will purchase $38,805,000 in uranium concentrates, estimates it will have a profit in 1957 of $1 million, or 32.7¢ per share, after the debenture and bank interest charges. It also estimates net profits of $432,000 for 1958; $514,000 for 1959; $603,000 for 1960; and $694,000 for 1961.

NUCLEAR FUNDS SHOW LARGER NET ASSETS:- Axe Science and Electronics Corp. has reported net income profit of $96,242.00 for its first nine months in business. The company, which started operations last February 3rd, had net asset value of $9.18 a share as against initial net asset value of $9.15 a share. (Axe Science & Electronics, while technically a mutual fund, is unique in that it does not make a continuous offering of the shares and in that the stock is actively trade on the American Stock Exchange. It obtained operating funds last January by selling 2.5 million shares, at $10 per share, of which it retained $9.15 with the balance for underwriters' and brokers' commissions. Investments are in the nuclear, and other scientific fields. Largest single stock commitment to date was $600,000 of Philips Lamp, the Netherlands industrial organization.)..... Third quarter net asset share value for 1955 of Atomic Development Mutual Fund was $13.57 per share, compared to $11.55 for the corresponding 1954 period, Newton I. Steers, the Fund president, has reported to his stockholders. The Fund paid total dividends of 25¢ this year, and will pay no further dividends for 1955. Fund holdings at the end of this third quarter (Sept. 30, 1955), show additions of 5,000 shares of Strategic Materials Corp., and 10,000 shares of Can-Met Explorations, Ltd., both active in Canadian metal mining. Deletions included Katanga Copper, Kennecott Copper, Dow Chemical, Blockson Chemical, and Tennessee Corporation.

CHANGES IN STOCKHOLDINGS MADE:- Changes in stockholdings of officers of firms with nuclear interests, made during October, include Nuclear Corp. of America, with G. M. Szabad, company secretary, selling 500 common shares, and 500 class A shares, reducing his holdings of common and class A to 500 each. At Continental Uranium, Inc., R. G. Sullivan, vice-president, sold 27,200 common shares, reducing his direct holdings to 203,300.

ANALYSES OF FIRMS DOING NUCLEAR WORK AVAILABLE:- A review of General Precision Equipment may be obtained from Halle & Stieglitz, 52 Wall St., NYC..... A review of Thompson Products is available from Laidlaw & Co., 25 Broad St., NYC..... A study of Consolidated Denison Mines, Ltd., may be obtained from Ross, Knowles & Co., Ltd., 25 Adelaide St., W., Toronto 1, Ontario, Canada.

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear work...

NEW PRODUCTS BEING DISTRIBUTED:- The Milatomic filter is now being distributed to the atomic energy field by Atomic Instrument Co., Cambridge, Mass., manufacturer and distributor of nuclear instruments and related equipment. This cellulose filter is said to have a high degree of particle retention, and capable of separating quantitatively particles on the order of 1.20 microns from liquid vehicles.

A small Van de Graaff particle accelerator, manufactured by High Voltage Engineering Corp., Cambridge, Mass., has been used successfully in tests in oil field radioactive techniques by Well Surveys, Inc., Tulsa, Okla. The neutron generator, which was incorporated in a standard 3 5/8-inch well logging assembly, is 3-inches in diameter and 47-inches long. It has been built to operate at temperatures up to 300-deg. F., and with external pressures up to 20,000 lbs/sq. in. Well Surveys, who did pioneer work on gamma ray and neutron well logging in 1938, developed the complex instrumentation used with this Van de Graaff. Company officials feel the new apparatus set-up will enable it to make more positive identification and location of oil-bearing strata.

NEW PRODUCTS USING NUCLEAR TECHNIQUES:- Carbon black reinforcing filler has been added to polyethylene which has then been irradiated, and the resulting product has superior properties, General Electric Co., which has been doing research on this problem, has now found. Unirradiated, the filled polyethylene was stiff, brittle and with no desirable physical properties. The irradiated, filled, material is said to have a tensile strength in the upper temperature ranges five to eight times that of the unfilled, irradiated material. It is not stiff or brittle, with tear strength and "cut through" qualities improved at both normal and elevated temperature.

A dry box technique for handling liquid metals, developed at the Atomic Energy Research Establishment, Harwell, England, has now been adapted to its own purposes by the Parsons & Marine Engineering Turbine Research and Development Assoc., (Pametrada) of that country. Pametrada was interested in liquid metals such as sodium, potassium, their alloys, etc., for use in cooling blades for high temperature gas turbines. It is now using a dry box, constructed from original Harwell designs, for such work as filling hollow turbine blades with these alloys, pouring these metals into the blades in a molten state, and conducting weighing, and other operations, inside the dry box, in a helium atmosphere.

PRODUCT EXHIBIT NEWS:- Some fourteen British instrument companies will show nuclear instruments at the Atomic Exposition being held in Cleveland, Ohio, Dec. 10-16th, 1955. The exposition, being held in conjunction with the Nuclear Congress sponsored by 26 technical and trade groups, will have exhibits from 150 organizations in the United States and abroad.

NUCLEAR EXPLOSIVE NEWS: UNITED STATES:- The so-called hydrogen (fusion) bomb is actually a very large fission bomb, Thomas E. Murray, USAEC Commissioner, revealed last week in New York. (Mr. Murray was the principal speaker at an anniversary dinner of Fordham University Law School, and spoke on Some Things the World Should Know about H-Bombs.) He said that the hydrogen bomb derives its main explosive power from the fission of uranium-238. The resulting large fall-out of radioactive strontium, which will be immediately following the detonation, and which will continue for years after, will put a limit to the number of large thermonuclear explosions that the human race can stand, he emphasized. He said this must be remembered when there is talk of "an all-out nuclear war". To prevent this destruction of the human race he advocated a public display to world leaders of a hydrogen bomb detonation as a means of deterring its use. (This display was called ineffectual for such a purpose by his fellow Commissioners Strauss, Libby, Von Neumann, and Vance, following Murray's statement.)

SOVIET UNION:- The Soviet Union confirmed last week that it had recently exploded a hydrogen bomb, which previously had been detected by United States, British, and other organizations monitoring the upper air and carrying on radioactive fall-out investigations on a continuing basis. The Soviet Foreign Ministry stated that this was the most powerful of all explosions which they had conducted so far. The explosion was made at "great height", to minimize fall-out, and research was conducted in connection with the explosion, the Ministry said. It was attempted to make this an efficient bomb, using the minimum material to achieve the maximum effect, the Soviet agency observed.

CONTRACTS LET, BIDS ASKED...in the nuclear field...

BIDS ASKED:- Invitation No. 401-56-3A has now been issued by the USAEC, Oak Ridge, Tenn., for construction of a process water treatment plant in the X-10 Oak Ridge area. The job is erecting a two story and basement building, and installing such equipment as gravimetric feeders, coagulators, sludge collectors, etc. Bid closing date is Dec. 20, 1955.

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- Moab Uranium Co., and Sovereign Uranium Gas & Oil Co., have begun a joint venture development of 32 mining claims in Mineral Canyon, near the Green River, west of Moab, Utah. Moab has sold Sovereign a 50% undivided interest in the group. The Mineral Canyon venture marks Sovereign's entrance into southeastern Utah uranium activity. During previous development work at Mineral Canyon by Moab over 370 tons of commercial ore were shipped.

CANADA:- At Gunnar Mines, in the Beaverlodge area, Northern Saskatchewan, shaft sinking preparations are now underway. The present depth of the shaft is 60-ft.; plans are to have it extended to the 1,000-ft. level by next March..... Mill operations at Pronto Uranium Mines, in the Blind River area, Northern Ontario, are on a satisfactory basis, W. H. Bouck, Pronto president has stated. Initial shipment of output was made the first of this month, and subsequent shipments are planned on an every-other-week basis he observed. The Pronto mill has been showing an excellent recovery rate, P. E. Young, mill manager, has said..... The value of uranium could move it in a few years into fourth or fifth position in the list of Canadian minerals, based on value of yearly production, it was forecast in Ottawa last fortnight at a symposium on Uranium--Its Availability and Distribution. The symposium was held by the Ottawa branch of the Canadian Institute of Mining and Metallurgy. Panel members were four of Canada's authorities in mining and nuclear work. The panel also observed that of 1,000 so-called uranium discoveries that are made in Canada, only one turns out to be a uranium producing property.

SOUTH AFRICA:- The United Nations Economic Committee has been told by D. A. V. Fischer, the South African delegate, that the value of uranium recovered from the gold mines' slimes in the Union may eventually contribute about $150,000,000 to that country's national income. Largest purchaser of such uranium output is the United States.

MEETINGS, COURSES, CONFERENCES...on nuclear subjects...

COURSES:- The National Industrial Conference Board (New York) concluded last fortnight its fourth course in the fundamentals of atomic energy which it has been conducting for industrial management men. Some 69 executives attended the most recent course, held at the Westchester Country Club, Rye, N.Y. Sessions were conducted by 30 instructors from firms engaged in nuclear work, from Government laboratories, and from universities.

Of the sixty-six students in the new USAEC's School of Nuclear Science and Engineering's second session, which began last fortnight, forty-five are from foreign countries. The school is operated by Argonne National Laboratory, Lemont, Ill., and has a full-time faculty headed by Norman Hilberry, deputy director of Argonne National Laboratory.

Fellowships are now available from the USAEC, for the academic year 1956-57, in two new fields closely related to atomic energy work--industrial hygiene and radiological physics. Information may be obtained from the fellowship office, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.

MEETINGS:- Early fears that nuclear power generation might be a threat to the steel industry have been dispelled, Charles L. Huston, Jr., president, Lukens Steel Co., Coatesville, Pa., told the annual meeting of the American Society of Mechanical Engineers in Chicago last fortnight. The industry had felt that demands for materials for atomic work might make millions of dollars in industrial equipment obsolete overnight. Now, he said, it knows that steel, in various forms, will be important in development of nuclear energy.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

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